Amendments to the Claims

The following listing of claims will replace all prior versions and listings of the claims in the application:

Claims 1-8 (canceled).

Claim 9 (currently amended): A method of precoding an orthogonal frequency division multiplexing (OFDM) system, comprising:

inserting one of more zeros between at least two sets of consecutive information symbols of the OFDM system by utilizing a precoder ($G(z)$), where $G(z) = \begin{bmatrix} I_{K\times K} \\ 0_{(M-K)\times K} \end{bmatrix}$, M and K are vector sizes, $M>K$, $I_{K\times K}$ is the $K\times K$ identity matrix, and $0_{(M-K)\times K}$ is the $(M-K)\times K$ all zeros matrix;

expanding a data rate of the OFDM system due to the insertion of zeros; and

removing spectral nulls of an intersymbol interference (ISI) channel of the OFDM system due to expansion of the data rate of the OFDM system.

Claim 10 (currently amended): A method of precoding an OFDM system as recited in claim ~~1~~ 9, wherein the OFDM system is precoded independent of the ISI channel.

Claim 11 (canceled).

Claim 12 (currently amended): A method of precoding an OFDM system as recited in claim ~~11~~ 9, wherein the precoder ($G(z)$) inserts M-K zeros between at least two sets of K consecutive information symbols of the OFDM system.

Claims 13-15 (canceled).

Claim 16 (currently amended): A method of reducing a data rate overhead ($\frac{(N+L)}{N}$) of an orthogonal frequency division multiplexing (OFDM) system, where N are the number of carriers in the OFDM system and L are intersymbol interference (ISI) channel lengths of the OFDM system, the method comprising:

~~providing~~ utilizing a precoder ($G(z)$), where $G(z)=I_{K\times K}$, K is a vector size, and $I_{K\times K}$ is the $K\times K$ identity matrix; and

squaring the identity matrix ($I_{K\times K}$) of the precoder ($G(z)$) to group input data of the OFDM system into $K\times 1$ vectors, wherein the squaring of the identity matrix maintains the data rate of the OFDM system~~,~~ and reduces the data rate overhead ($\frac{(N+L)}{N}$) of the OFDM system.

Claim 17 (currently amended): A method of reducing a data rate overhead of an OFDM system as recited in claim 16, wherein the squaring of the identity matrix ($I_{K\times K}$) ~~method~~ reduces the data rate overhead of the OFDM system K times.

Claim 18 (currently amended): A method of reducing a data rate overhead of an OFDM system as recited in claim 16, wherein the squaring of the identity matrix ($I_{K\times K}$) further removes spectral nulls from the ISI channel.